ISPB 2024

14TH INTERNATIONAL SYMPOSIUM ON PLASMA BIOSCIENCE
Associated with 6TH TUTORIALS ON PLASMA BIOSCIENCE

PROGRAMS

Programs

23rd June, 2024 (Sunday)	
13:00 ~ 13:10	**Welcome Remarks** **Prof. Eun Ha Choi Chairman of ISPB14**
13:10 ~ 14:10	**[Tutorial 1]** **Plasma bioscience and application(TBD)** Prof. Eun Ha Choi (Kwangoon University)
14:10 ~ 14:20	Tea break
14:20 ~ 15:20	**[Tutorial 2]** **Plasma Chemistry in Liquids: Fundamentals & Novel Apps for Plasma Bioscience** Prof. Alexander Fridman (Drexel University)
15:20 ~ 15:30	Tea break
15:30 ~ 16:30	**[Tutorial 3]** **Generation of Nitrogen Atoms and their Application to Methane Dissociation** Prof. Han Sup Uhm(KwangWoon University)
16:30 ~ 16:40	Tea break
16:40 ~ 17:40	**[Tutorial 4]** **Plasma application to food industry** Prof. Gyungsoon Park (Kwangwoon University)
17:40 ~ 17:50	**Closing remarks**
17:50 ~	**Welcome Reception (2F, Lobby)**

24th June, 2024 (Monday)	
09:10 ~ 09:30	Welcome ISPB14 remark
Mo1	**Session 1** **Chairman : Eun Ha Choi**
09:30 ~ 10:10	**[Plenary Talk 1]** **Biological interactions of plasma-activated solutions** Hiromasa Tanaka (Nagoya Univ., Japan)
10:10 ~ 10:30	Tea Break
10:30 ~ 11:00	(Invited Talk1) **Evaluation of cold atmospheric-pressure plasma induced short- and long-lived reactive oxygen and nitrogen species** Jun-Seok Oh (Osaka Metropolitan Univ., Japan)
11:00 ~ 11:30	(Invited Talk2) **Enhancing Food Security through Cold Plasma Technology: Research and Business Development in Thailand** Prof Choncharoen Sawangrat (Chiang Mai Univ., Thailand)
Group photo	
11:30 ~ 13:00	Lunch Time
Mo2	**Session 2** **Chairman : Hiromasa Tanaka**
13:00 ~ 13:30	(Invited Talk3) **The roles of aqueous biofilms in pathogen inactivation by atmospheric pressure cold plasmas** Dongping Liu (Dalian Univ., China)
13:30 ~ 14:00	(Invited Talk4) **Research on Environmental Application of Plasma Technology in KFE-IPT** Yong Sup Choi (KFE-IPT, Korea)
14:00 ~ 14:20	Tea Break
14:20 ~ 14:50	(Invited Talk5) **Understanding Nitrous and Nitric acids Formation in Plasma-Treated Water: Decisive Role of Nitrogen Oxides (NOx=1–3)** Sanghoo Park (KAIST, Korea)
14:50 ~ 15:20	(Invited Talk6) **Voltammetric Analysis of Nitrate/Nitrite in Plasma-Treated Water Using an Unmodified Glassy Carbon Electrode** Byoungchoo Park (Kwangwoon Univ., Korea)
15:20 ~ 15:40	Tea Break
Mo3	**Session 3** **Chairman : Kazunori Koga**
15:40 ~ 16:10	(Invited Talk7) **Immunoassay using optical techniques for high-performance point-of-care testing** Kihyeun Kim (GIST, Korea)
16:10 ~ 16:40	(Invited Talk8) **Plasma-based Technology for Modern Farming** Neha Kaushik (The Univ. of Suwon, Korea)
16:40 ~ 17:40	ISPB special talk **Progress report of IEC 60601-2-91, WG41, TC62D: Particular standard for basic safety and essential performance of plasma wound treatment ME** Eun Ha Choi(Kwangwoon Univ., Korea)
17:40 ~ 19:00	**Poster session 1 (2F, Lobby)**

25th June, 2024 (Tuesday)	
Tu1	**Session 4** **Chairman : Dongping Liu**
9:00 ~ 9:30	(Invited Talk9) **Elucidating the Anti-Proliferative Mechanism of Cold Atmospheric Plasma: Involvement of Noncoding RNAs in Breast Cancer Cells** Sun Jung Kim (Dongguk University, Korea)
9:30 ~ 10:00	(Invited Talk10) **Atmospheric pressure air plasma sources and their applications** Xinpei Lu (HuaZhong University of Science and Technology, China)
10:00 ~ 10:30	(Invited Talk11) **Quantification of RONS introduced into seeds by atmospheric pressure plasmas** Kazunori Koga (Kyushu University, Japan)
10:30 ~ 10:50	Tea Break
Tu2	**Session 4-1** **Chairman : Sun Jung Kim**
10:50 ~ 11:20	(Invited Talk12) **Plasma-Generated Nitric Oxide Water for Biological Applications: Pathogen Inactivation, Nano-biotechnology, and Cosmetic Innovations** Nagendra Kaushik (Kwangwoon Univ.,Korea)
11:20 ~ 11:50	(Invited Talk13) **The Affected Of Non-thermal Plasma Jet at Atmospheric Pressure To Cytotoxicity Effect On Candida albicans** Pradoong Suanpoot (Maejo University, Chiang Mai)
11:50 ~ 13:00	Lunch Time
13:00 ~ 17:00	**Excursion**
17:00 ~	**Banquet**

26th June, 2024 (Wednesday)	
We1	**Session 5** **Chairman : Gyungsoon Park**
9:30 ~ 10:10	**[Plenary Talk 2]** **Input of bactericidal and regenerative effects in wound healing upon non-thermal plasma treatments** Svetlana Ermolaeva (Gamaleya National Research Center for Epidemiology and Microbiology , Russia)
10:10 ~ 10:40	(Invited Talk14) **Plasma Promotion on Rice Growth and Multi-omics Analysis** Feng Huang (China Agricultural University, China)
10:40 ~ 10:50	Tea Break
10:50 ~ 11:20	(Invited Talk15) **Plasma application to soil microorganisms** Gyungsoon Park (Kwangwoon Univ.,Korea)
11:20 ~ 11:50	(Invited Talk16) **Approach to study the effects of cold plasma in combination with biostimulants on faba bean (Vicia faba L.)** Henrike Brust (INP, Germany)
11:50 ~ 13:00	Lunch Time
13:00 ~ 14:00	**Poster session 2 (2F, Lobby)**
We2	**Session 6** **Chairman : Svetlana Ermolaeva**
14:00 ~ 14:30	(Invited Talk17) **Hydroxyl radical distribution in the Ar plasma jet by laser induced florescence** Jun Sup Lim (Kwangwoon University, Korea)
14:30 ~ 15:00	(Invited Talk18) **Utilization of plasma technology in agriculture** Mi Ja Lee (National Institute of Crop Science, Rural Development Administration, Korea)
15:00 ~ 15:10	Tea break
We3	**Session 7** **Chairman : Henrike Brust**
15:10 ~ 15:40	(Invited Talk19) **Effective Degradation of Pharmaceutical Compounds in Sequential DBD Plasma Using 3-Electrode Fenton Electrolysis** Min Jang (Kwangwoon University, Korea)
15:40 ~ 16:10	(Invited Talk20) **Synergistic effect of cold plasma and sulfate radical advanced oxidation process in the efficient removal of dyes from aqueous solutions** Jae-Kyu Yang (Kwangwoon University, Korea)
16:10 ~ 16:30	Tea break
16:30 ~ 17:00	(Invited Talk21) **Particular Standards of non-thermal plasma wound treatment equipment** Jin Sung Choi (Kwangwoon Univ.,Korea)
17:00 ~ 17: 20	Break
17:20 ~ 18:00	Poster Award & Closing Declaration

Poster Session 1

Date & Time : 17:40~19:00, Monday, June 24, 2024	
Program No.	Title of Abstract
P01	**Exploring Soft Plasma Jet and Plasma Activated Water for Oral Cancer Treatment: Evaluating Direct and Indirect Therapeutic Impact** Juie Rana, Ihn Han*, Eun Ha Choi* Kwangwoon Univ., Korea
P02	**UV-vis-NIR spectrophotometry for determining the plasma-induced short- and long-lived ROS** Yamato Torii[1], Hirofumi Kurita[2],Tatsuru Shirafuji1, Jun-Seok Oh1 [1] Osaka Metropolitan Univ., Japan [2] Toyohashi University of Technology, Japan
P03	**Nonthermal biocompatible plasma stimulates osteogenic differentiation in hBMSCs by targeting the p38/ FOXO1 and PI3K/AKT pathways** Khadija Akter, Ihn Han, Eun Ha Choi* Kwangwoon Univ., Korea
P04	**Plasma-activated Plant Derivatives induces ferroptosis and apoptosis through the Gpx4/p-53 interaction pathway in human lung adenocarcinoma cells** Sabnaj Khanam, Eun ha Choi, Ihn Han Kwangwoon Univ., Korea
P05	**Cosmetics Application of Plasma-Generated Nitric Oxide Water: Anti-aging effect by reversal of aging-related signature in human skin cells** Apurva Jaiswal[1], Neha Kaushik[2] Tirtha Raj Acharya[1], Han Sup Uhm[1], Eun Ha Choi[1]* , Nagendra Kumar Kaushik[1]* [1]Kwangwoon Univ., Korea [2]The Univ. of Suwon, Korea
P06	**Inactivation of SARS-CoV 2 pseudovirus expressing single-point mutation D614G spike protein by NO-PAW generated via multi-cylindrical DBD Plasma** Paritosh Patel[1], Neha Kaushik[2] , Sudakshya Sucharita Lenka[3] , Soujanya Ghosh[3] , Suresh K Verma[3] , Eun Ha Choi*[1] , Nagendra Kumar Kaushik*[1] [1]Kwangwoon Univ., Korea [2]The Univ. of Suwon, Korea [3]KIIT Univ., India
P07	**Effect of nonthermal biocompatible atmospheric pressure plasma on bacterial biofilms** Madeeha Iqbal, Ihn Han*, Eun Ha Choi* Kwangwoon Univ., Korea
P08	**Model and Characteristics of Plasma Chemistry in DBD Plasma Source** Jang Sick Park and Eun Ha Choi Kwangwoon Univ., Korea
P09	**Considerations for the development of mouthwash products using plasma-originated nitrogen oxide water (PNOW) and preliminary results of antibacterial activity by PNOW** Yung Oh Shin*, Sekar Ashokkumar, Anchal Bhatnagar, Jang Sick Park, Eun Ha Choi Kwangwoon Univ., Korea

P10 **Nanomaterials as a promising transparent electrode for flexible electronics**

Young-Jei Oh

Kwangwoon Univ., Korea

P11 **Plasma Treated Liquids: A Sustainable Approach to Eradicating Pathogens Associated with Gastrointestinal Infections**

Manorma Negi[1], Neha Kaushik [2]*, Prajwal Lamichhane[1], Apurva Jaiswal[1], Shweta B Borkar[1], Paritosh Patel[1], Eun Ha Choi[1]*, Nagendra Kumar Kaushik[1]*

[1]Kwangwoon Univ., Korea

[2]The Univ. of Suwon, Korea

P12 **Plasma Generated Nitric Oxide Water: Emerging Technology for Enhancing Cancer Immunogenicity**

Manorma Negi[1] , Neha Kaushik[2], Prajwal Lamichhane[1], Apurva Jaiswal[1], Paritosh Patel[1], Eun Ha Choi[1]*, Nagendra Kumar Kaushik[1]*

[1]Kwangwoon Univ., Korea

[2]The Univ. of Suwon, Korea

P13 **Utilizing Electrical Discharges in Liquid for Innovative Solutions: Plasma Applications in Agricultural and Biomedical Sectors**

Sabnaj Khanam, Madeeha Iqbal, Khadija Akter, Juie Rana, Anchal Bhatnagar, Young Jun Hong, Eun Ha Choi, Ihn Han*

Kwangwoon Univ., Korea

P14 **The effect of non-thermal atmospheric pressure plasma on fungal cellulase production**

Nan-Nan Yu, Wirinthip Ketya, Eun Ha Choi, Gyungsoon Park*

Kwangwoon Univ., Korea

P15 **Effects of gas generated by multiple cylinder-type electrodes DBD plasma on soil microorganisms and plant growth**

Wirinthip Ketya, Nan-Nan Yu, Tirtha Raj Acharya, Eun Ha Choi, Gyungsoon Park*

Kwangwoon Univ., Korea

P16 **Inhibiting Fungal Growth on Green Coffee Beans by Using Multi-Electrode Cylindrical Dielectric Barrier Discharge Plasma: Mitigating Ochratoxin A Contamination**

Rakeb Kifle[1], Kirubel Amsalu[1], Chung Tae Kim[2] , Eun Ha Choi[1]

[1]Kwangwoon Univ., Korea

[2]Addis Ababa science and Technology Univ., Ethiopia

P17 **Inactivation of pathogenic Colletotrichum sp and Aeromonas cavea by cylinder dielectric-barrier discharge (CDBD) plasma generated reactive oxygen and nitrogen species (RONS)**

Ashokkumar Sekar, Yung Oh Shin, Nagendra Kumar Kaushik, Ihn Han, Jun Sup Lim, Eun Ha Choi

Kwangwoon Univ., Korea

P18 **Improving the growth of Pak Choi Seedlings under salinity Stress using plasma treated water with metal ions**

Rida Javed, Sohail Mumtaz,, Kirubel Amsalu and Eun Ha Choi*

Kwangwoon Univ., Korea

P19 **Rapid cooling and Non-Thermal Plasma treatment to enhance food safety against food pathogens like L. monocytogenes.**

Anchal Bhatnagar, Eun Ha Choi*, Ihn Han*

Kwangwoon Univ., Korea

Poster Session 2

Date & Time : 13:00~14:00, Wednesday, June 26, 2024	
Program No.	Title of Abstract
P20	**Nonthermal plasma applied for removal of Norfloxacin with ZnFe2O4 nanoparticles via RONS oxidative and reductive process** Shaik Abdul Munnaf, Eun Ha Cho* Kwangwoon Univ., Korea
P21	**Abatement of Chlorpyrifos Residue from Coffee Beans via Multi-Electrode DBD Plasma Washing & Toxicity Analysis: Effect of O3 & NO gas** Kirubel Amsalu[1], Tirtha Raj Acharya[1], Apurva Jaiswal[1], Prajwal Lamichhane[1], Rakeb Kifle[1], Neha Kaushik[2], Chung Tae Kim[3], Kaushik Nagendra Kumar[1], Eun Ha Choi[1]* [1]Kwangwoon Univ., Korea [2]The Univ. of Suwon, Korea [3]Addis Ababa science and Technology Univ., Ethiopia
P22	**Microwave Plasma Torch and its Applications to Various Areas** Han S. Uhm Kwangwoon Univ., Korea
P23	**Revolutionizing Dye Wastewater Treatment with a Synergistic Catalyst** Prajwal Lamichhane, Tirtha Raj Acharya, Oat Bahadur Dakhal, Roshani Dahal, Eun Ha Choi* Kwangwoon Univ., Korea
P24	**Decaffeinating the Caffeine Contaminated Water Using Multi Cylindrical DBD Plasma and Toxicity Analysis** Roshani Dahal, Oat Bahadur Dhakal , Tirtha Raj Acharya, Prajwal Lamichhane, Eun Ha Choi* Kwangwoon Univ., Korea
P25	**Exploring the Synergy of Plasma and Maghemite Nanoparticle Catalysis for Enhanced Triclosan Degradation** Oat Bahadur Dhakal, Roshani Dahal, Tirtha Raj Acharya, Prajwal Lamichhane, Eun Ha Choi, Kwangwoon Univ., Korea
P26	**Non-Thermal Plasma Technologies for Sustainable Dye Degradation and Biotoxicity Analysis** Tirtha Raj Acharya[1], Prajwal Lamichhane[1], Manorma Negi[1], Kirubel Amsalu[1], Oat Bahadur Dkahal[1], Roshani Dahal[1], Neha Kaushik[2], Nagendra Kumar Kaushik[1], Eun Ha Choi[1]* [1]Kwangwoon Univ., Korea [2]The University of Suwon, Korea
P27	**Application of Nonthermal Atmospheric Pressure Plasma for the Degradation of Carbamazepine Using Argon Jet** Zaffar Iqbal, Kirubel Amsalu, Sohail Mumtaz, Oat Bahadur Dhakal, Roshani Dahal, Qayam Ud Din, Eun Ha Choi* Kwangwoon Univ., Korea

P28 **Activation Of Persulfate Using Cold Plasma and Boron Doped Graphene Like Carbon for The Efficient Degradation of Micropollutant: Insight Studies of Naproxen and Ammonia Removal from Aqueous Solutions**

Chhakchhuak Vanlalhmingmawia, Dong-Su Kim, Ye-Jin Kim, Jae-Kyu Yang*
Kwangwoon Univ., Korea

P29 **Studies on synergistic effect of cold plasma and sulfate radical advanced oxidation process for the facile degradation of PFOA in an aqueous solution**

Ye Jin Kim, Vanlalhmingmawia Chhakchhuak, Dong Su Kim*, Jae Kyu Yang
Kwangwoon Univ., Korea

P30 **Degradation of Azo Dyes by Non-Thermal Plasma Jet**

Qayam Uddin, Prajwal Lamichhane, Sohail Mumtaz, Zaffar Iqbal, Eun Ha Choi*
Kwangwoon Univ., Korea

P31 **Plasma-photocatalyst system development and mechanism investigation for simultaneous removal of iron and manganese in groundwater**

So Yeon Yoon, Seok Byum Jang, Nurhaslina Abd Rahman, Kien Tiek Wong, Choe Earn Choong, Min Jang*
Kwangwoon Univ., Korea

P32 **Plasma-catalysis system development for PFOA removal**

Choe Earn Choong and Min Jang*
Kwangwoon Univ., Korea

P33 **Economic and efficient demineralization of papermill wastewater by plasma-activated persulfate sources**

Nurhaslina Abd Rahman, Choe Earn Choong, Min Jang*
Kwangwoon Univ., Korea

P34 **Surface μ-DBD plasma augments coronavirus recognition genes in altered lung cells, boosting pathogen recognition receptors against COVID**

Paritosh Patel[1], Neha Kaushik[2], Tirtha Raj Acharya[1] , Eun Ha Choi*[1], Nagendra Kumar Kaushik*[1]
[1]Kwangwoon Univ., Korea
[2]The University of Suwon, Korea

P35 **Gas Plasma and Plasma Generated Nitric Oxide Water Impact on Cancer Metastasis: Targeting UBP1 Expression to Inhibit Carcinogenesis**

Apurva Jaiswal[1] , Neha Kaushik[2] , Eun Ha Choi*[1] , Nagendra Kumar Kaushik*[1]
[1]Kwangwoon Univ., Korea
[2]The University of Suwon, Korea

P36 **Control of wettability and degradtion rate of electrospun PCL membranes through surface modification using non-thermal atmospheric pressure plasma treatment**

Sanghyun Cho, Jae-Sung Kwon
Yonsei Univ., College of Dentistry, Korea